This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A process for growing a GaAs ~~epitaixial~~ epitaxial layer on Ge/SiGe/Si substrate comprising steps of:

(1) providing a clean silicon wafer;

(2) growing a first SiGe ~~epitaixial~~ epitaxial layer with a certain thickness, [[which]] wherein the layer comprises at least 70 wt.% of Ge;

(3) performing in-situ high temperature annealing for the first layer;

(4) growing a second and/or an optional third layers [[which]] wherein the Ge content of the optional third layer is more than that of the second layer, and the Ge content of the second layer ~~hereof~~ is more than that of the first [[one.]] layer, and ~~During~~ during each of two growing periods, performing in-situ high temperature annealing for those layers;

(5) growing a pure Ge film on the ~~epitaixial~~ epitaxial layer from step (4);

(6) finally, growing GaAs epitaxy on said Ge film.

2(currently amended). The process according to Claim 1, wherein, in steps (1) to (5), the Ge content of ~~epitaixial~~ epitaxial layers, from the first layer, the second and/or third layer to a pure Ge film as the topmost layer, is stepwise increasing, and their growth is carried out at a temperature of from 350 to 650°C, growth gases having pressure of from 20 to 100 m-Torr by using ultra-high vacuum chemical vapor deposition; in addition, in step (6), growing for GaAs epitaxy is carried out at a temperature of 600°C by using metal organic chemical vapor deposition and the growth time depends on the device requirement.

3(currently amended). The process according to claim 1 or 2, wherein the first SiGe ~~epitaixial~~ epitaxial layer is $Si_{0.1}Ge_{0.9}$ which has a thickness of at least 0.1μm.

4(currently amended). The process according to claim 3, wherein the first SiGe ~~epitaixial~~ epitaxial layer is $Si_{0.1}Ge_{0.9}$ which has a thickness of 0.5 to 0.8μm.

5(currently amended). The process according to claim 1 or 2, wherein the second SiGe ~~epitaixial~~ epitaxial layer is $Si_{0.05}Ge_{0.95}$ which has a thickness of at least 0.1μm.

6(currently amended). The process according to claim 5, wherein the second SiGe ~~epitaixial~~ epitaxial layer is $S_{i0.05}Ge_{0.95}$ which has a thickness of 0.5 to 0.8μm.

7(currently amended). The process according to claim 1 or 2, wherein the optional third SiGe ~~epitaixial~~ epitaxial layer is $Si_{0.02}Ge_{0.98}$ which has a thickness of at least 0.1μm.

8(currently amended). The process according to claim 7, wherein the optional third SiGe ~~epitaixial~~ epitaxial layer is $Si_{0.02}Ge_{0.98}$ which has a thickness of 0.5 to 0.8μm.

9(currently amended). The process according to claim 1, wherein the first SiGe ~~epitaixial~~ epitaxial layer can comprise 70 to 90 wt.% of Ge.

10(currently amended). The process according to claim 1, wherein the second SiGe ~~epitaixial~~ epitaxial layer can comprise 80 to 95 wt.% of Ge.

11(original). The process according to claim 1, wherein growing for epitaxy layer is carried out at a temperature of 400°C.

12(original). The process according to claim 1 or 2, wherein in-situ high temperature annealing is performed at a temperature of 750°C in at least 5 min.

13(original). The process according to claim 12, wherein the atmosphere of in-situ high temperature annealing is hydrogen with a pressure of 20 m-Torr.

14-18(withdrawn).

19(new). A process for growing a GaAs epitaxial layer on Ge/SiGe/Si substrate comprising steps of:

(1) providing a clean silicon wafer;

(2) growing a first SiGe epitaxial layer with a certain thickness, wherein the layer comprises at least 70 wt.% of Ge;

(3) performing in-situ high temperature annealing for the first layer;

(4) growing a second layer and a third layer wherein the Ge content of the third layer is more than that of the second layer, and the Ge content of the second layer is more than that of the first layer, and during each of two growing periods, performing in-situ high temperature annealing for those layers;

(5) growing a pure Ge film on the epitaxial layer from step (4);

(6) finally, growing GaAs epitaxy on said Ge film.